CHAIRPERSON
Allan O'Shea
VICE-CHAIRPERSON
Edward Haik

Ken Hilliard
Ervin Kowalski
Jim Krolczyk
Glenn Lottie
Carl Rutske

Manistee County Board of Commissioners

Manistee County Courthouse • 415 Third Street • Manistee, Michigan 49660

CLERK
Marilyn Kliber
(231) 723-3331
CONTROLLER/ADMINISTRATOR
Thomas Kaminski
(231) 398-3500

DRAFT

GREEN TEAM/RECYCLING COMMITTEE

Friday, September 4, 2009
1:30 P.M.

Manistee County Courthouse & Government Center
Board of Commissioners Meeting Room

REPORT

Members Present: Allan O'Shea; Glenn Lottie; and Carl Rutske

Others Present: John Campbell, Big Fish Environmental; Thomas D. Kaminski, County Controller/Administrator; Sue Wagner, County Planner; Kendra Thompson, Architect; Chip Johnston, Manistee-Benzie Community Mental Health; Kathy Scarlata, Community Member; Mary Pitcher, AES Recycling Coordinator; Andrea Cosier, Library Head of Youth Services; Barry Lind, Manistee Blacker Airport Manager; Bruce Schimke, Maintenance Supervisor; and Rachel Nelson, Administrative Secretary

The meeting was called to order at 1:40 P.M.

ITEMS REQUIRING BOARD ACTION

Ms. Pitcher presented a generic version of the interlocal agreement that would be necessary between the County and any municipalities that choose to participate in P.A. 69 for recycling (APPENDIX A). She has been meeting with the townships and giving presentations on P.A. 69. The interlocal agreement has not had legal review yet. After discussion,

Mr. Lottie recommended that pending the County Prosecutor's review and approval, the Interlocal Agreement be approved for use with any municipality that chooses to participate, and that the County Board Chair be authorized to sign the Interlocal Agreement(s). No alternative recommendation was proposed.

Ms. Pitcher stated that she would like to apply for an Energy Efficiency Conservation Block Grant for $40,000 to continue promoting P.A. 69 and educating those municipalities that have not signed an interlocal agreement in 2010. Ms. Wagner noted that only one application can be submitted for this grant by the County and that the minimum/maximum is $115,000 (based on population). However, the official request for proposals (RFP) has not been issued yet, so the details for the grant may change. The RFP should be issued within the next couple weeks, with applications due 30 days after it is issued. It was noted that energy audits for the townships could be added to the grant to fulfil the $115,000 requirement. It was also noted that the Alliance for Economic Success should include the Planning Department in this grant writing process. After discussion,

Mr. Rutske recommended that an application for recycling and energy audits in Manistee County be submitted for the Energy Efficiency Conservation Block Grant (EECBG). No alternative recommendation was proposed.

DRAFT

Ms. Pitcher stated that additional points will be awarded to Manistee County's EECBG application if the County has accepted the Michigan Green Communities Challenge with a resolution (APPENDIX B). Ms. Nelson will look into the program more, but it appears that the County is already doing many of the items in the Challenge. After discussion,

Mr. Rutske recommended that Manistee County pass a resolution adopting the Michigan Green Communities Challenge. No alternative recommendation was proposed.

ITEMS NOT REQUIRING BOARD ACTION

John Campbell, President of Big Fish Environmental, made a presentation to the Committee regarding his company's cutting edge domestic septage treatment. The facility works with septage and biosolids, and the plant can be shut down during slow times to conserve energy. Their facility has been in Charlevoix for four years. Feasibility studies can be done in other communities to see if a similar facility would work well there.

A PowerPoint presentation was shown that informed the Committee about the recycling program in Kershaw County, South Carolina.

Thank-you's and certificates of appreciation will be sent to the Energy Fair volunteers. The volunteers and others that helped with the 2009 Michigan Energy Fair will be honored at the Tuesday, September 15, 2009 meeting of the Manistee County Board of Commissioners. Mr. O'Shea informed the Committee that unfortunately, the Great Lakes Renewable Energy Association has decided that the Energy Fair will not return to Manistee County next year. He will be looking into the possibility of western Michigan doing an Energy Fair on their own.

Mr. O'Shea stated that it would be nice to have a joint meeting with several of the Commissioners, the Fair Board, Onekama Township and the Village of Onekama to discuss the future of the fairgrounds. Mr. Lottie added that he doesn't feel the County should support any additional capital improvement projects at the fairgrounds until a master plan is developed.

Mr. Lottie presented information about heat recovery systems (APPENDIX C). Ms. Thompson stated that the airport has two heat recovery systems - one that runs all the time and a larger one with CO2 sensors for times with high occupancy. The Courthouse could be retrofitted, or CO2 sensors could be added to the existing rooftop units, which would be fairly inexpensive.

The meeting adjourned at 3:35 P.M.

_____
Allan O'Shea, Chairperson

_____
Glenn Lottie, Commissioner

_____
Carl Rutske, Commissioner

APPENDIX A

RECYCLING PROGRAM
INTERLOCAL AGREEMENT

RECITATIONS

Manistee County as required by P.A. 641, 1978, as amended, has adopted a Solid Waste Management Plan.

The Township of _____, by resolution, also adopted the Manistee County Solid Waste Management Plan as its guidelines for addressing the solid waste management issues of the County.

Manistee County, and the City, Townships and Villages, are responsible for funding and providing recycling, composting, and hazardous waste collection programs in Manistee County, as stated in the Plan.

P.A. 138 of 1989, as amended by P.A. 069 of 2005, allows by resolution of the County Board of Commissioners, the imposition of a surcharge on households within the County up to a maximum of a $25.00 fee per year per household to provide for waste reduction programs for the collection of consumer source separated materials, as defined by Act 641, P.A. 1978, as household hazardous wastes, tires, batteries, and yard clippings. A fee of $12.00 annually per household is in effect for the duration of this agreement unless amended by mutual consent.

Adequate funding is necessary for a continued recycling program plan consistent with the County Solid Waste Management Plan.

The revenues collected for this program are held with the County Treasurer and are used solely for recycling.

STATEMENT OF AGREEMENT

Based on the above-stated-facts, Manistee County and the Township of _____, hereby agree to the imposition and collection by the County Treasurer of a surcharge on households to cover costs of waste reductions programs and collection of consumer source separated material, as defined by Act 641, P.A. 1978. All funds so collected will be administered by Manistee County in accordance with State Statute and the Manistee County Solid Waste Plan. Manistee County will develop, implement and launch the recycling services under the guidance and direction of the Alliance for Economic Success. The term of this agreement is January 1, 2010 – December 31, 2010.

_____
Chairperson, Manistee County
Board of Commissioners

_____
Supervisor
_____ Township

_____
Executive Director
Alliance for Economic Success

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DRAFT

Manistee 24/7 drop off program organizational structure

County responsibilities:

- Set & collect PA 69 fee
- Holds contract with industry to transport and process recyclables
- Maintains accounts payable for contracted services
- Contracts with AES for all other administration of the program.

AES responsibilities:

- Design a sustainable county wide recycling program
- Seek stable funding source
- Secure interlocal agreements with townships using PA 69
- Draft proposed budget for BOC
- Provide technical assistance for best management practices to municipalities not using PA 69
- Establish 24/7 drop off sites in appropriate locations
- Oversee bid process, drafting contracts, all necessary documents
- Provide oversight for "site monitors", person paid to monitor bins. Could be a township resident, a CMH client, etc
- Recommend to the BOC a citizen recycling advisory committee
- Educate, market and promote recycling
- Seek markets for additional items
- Provides oral and written reports to County administrator and Board of Commissioners
- Research additional mechanisms for waste reduction in Manistee County
- Serve as liaison between municipalities, Manistee County, and the public. Establish and maintain cooperation & open communication. Respond to recycling and solid waste inquiries and concerns.

Projected PA 69 Revenue

Township	Improved parcel count	revenue @ $12
Arcadia	563	$6,756
Bear Lake	802	$9,624
Brown	411	$4,932
Cleon	435	$5,220
Dickson	720	$8,640
Filer	1109	$13,308
Manistee	1190	$13,308
Maple Grove	515	$6,180
Marilla	211	$2,532
Norman	1531	$18,372
Onekama	929	$11,148
Pleasanton	614	$7,368
Springdale	638	$7,656
Stronach	582	$6,984
Village of Bear Lake	147	$1,764
Village of Copemish	108	$1,296
Village of East Lake	230	$2,760
Village of Kaleva	238	$2,856
Village of Onekama	282	$3,384
City of Manistee	2941	$35,292

APPENDIX B

Michigan Green Communities Challenge - *An Energy Efficiency and Conservation Strategy*

Step 1: Obtain Organizational Support (Resolution)

Obtain Organizational Support (Resolution)
Passage of the support resolution by the governing body is the first essential step toward achieving the Basic Challenge. This resolution acts as a commitment or pledge to work toward the objectives as identified in the Michigan Green Communities Challenge.
See Attachment A

Step 2: Assign Responsibility

It is important that someone be responsible for follow-through of Steps 1 – 6 of the Challenge. One way to accomplish this step is to establish an energy manager position/responsibility or management team within the unit of local government. Clearly define roles for the management team which may include a sustainability manager, energy manager, or similar title. Also consider establishing an advisory commission (or "Green Team") composed of local residents and business representatives to advise and assist the local governing board on policies and practices dealing with the environment, energy efficiency and conservation.
Completing this step does not require the creation of a new position. The goal is to appoint someone to be "in charge" of the community's completion of the Challenge.

Step 3: Collect all Energy Data for Governmental Operations

Collection of critical data is an important aspect of preparing an accurate and significant strategy. It allows for establishing a baseline for future analysis of energy reduction efforts and also allows municipalities to benchmark themselves against similar-sized municipal entities.

Local government agencies spend more than $10 billion a year on energy to provide public services and meet constituent needs while grappling with tightening budgets. Yet nearly one-third of the energy used to run typical government buildings goes to waste. The Environmental Protection Agency (EPA) provides local and state governments, as well as federal agencies, a proven energy management strategy and no-cost tools to save energy and money and demonstrate their environmental leadership. You may register with the EPA's Energy Star Challenge and use its tools, or an equivalent system, to conduct a baseline emissions inventory of your governmental facilities.

Step 4: Assess Situation and Identify Gaps

Following data collection, a clearer picture of the community's status becomes available. This presents an opportunity to begin setting priorities, identifying low-hanging fruit (projects easily completed at little or no cost), and also shows a community where gaps may exist. When the community can readily identify gaps in its operations, it can begin to address them through planning and implementation.

Step 5: Develop Goals and Activities: Planning for the Future

Goals and activities should be evaluated and selected. Measurable outcomes should be stated so that progress and achievement can be monitored.

See Attachment C for suggested goals and activities.

Step 6: Measure Performance and Quantify Results

Evaluate the progress made by including formal review processes that compare the outcomes with the projected goals. The evaluation results and information gathered will assist in creating new goals, identifying best practices, and setting new performance goals. If applicable, the community should review energy use and cost data to measure accomplishments. Energy performance should be compared to baseline information. Measure your results and reward individuals and teams for accomplishments. Document savings opportunities as well as non-quantifiable benefits that can be leveraged for future initiatives.

Celebrate your accomplishments with your community.

For additional information visit: www.mml.org/resources/educenter/green_challenge.html

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Manistee County Board of Commissioners

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RESOLUTION ACCEPTING THE MICHIGAN GREEN COMMUNITIES CHALLENGE

At a regular meeting of the Manistee County Board of Commissioners held in the Manistee County Courthouse & Government Center, 415 Third Street, Manistee, Michigan, on the 15th day of September, 2009.

PRESENT:

ABSENT:

The following resolution was offered by _____ and seconded by _____:

WHEREAS, the County of Manistee wants to emphasize the benefits of energy efficiency and conservation; and

WHEREAS, the County of Manistee wants to demonstrate that energy efficiency and conservation practices can be applied to the daily governmental operations and to infrastructure projects; and

WHEREAS, the County of Manistee seeks to find methods of service delivery and operations that conserve energy and resources, saving taxpayer dollars and protecting and preserving the environment; and

WHEREAS, the County of Manistee recognizes that sound energy efficiency and conservation practices can reduce government costs over the long-term; and

WHEREAS, the County of Manistee will lead by example to show the practicality and effectiveness of these practices; and

WHEREAS, the County of Manistee seeks to encourage its citizens and businesses to initiate stewardship activities that benefit the environment and their community;

NOW, THEREFORE, BE IT RESOLVED, that the County of Manistee accepts the Michigan Green Communities Challenge and pledges to work toward achieving the goals of the *Basic Challenge* over the next three years, some of which has already been accomplished.

STATE OF MICHIGAN)
)ss.
COUNTY OF MANISTEE)

I, Marilyn Kliber, County Clerk, do hereby certify that the foregoing is a true copy of a Resolution adopted by the Manistee County Board of Commissioners at a regular meeting held on the 15th day of September, 2009 by the following vote:

YEAS:

NAYS:

NOT VOTING:

I further certify that the foregoing Resolution is a true, correct and complete transcript of the original of said Resolution appearing on file and of record in my office. I further certify that the meeting was held and the minutes therefore were filed in compliance with Act No. 267 of the Public Acts of 1976.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the Seal of the County of Manistee this 15th day of September, 2009.

CLERK OF THE COUNTY COMMISSION
MANISTEE COUNTY, MICHIGAN

(09_22)

_____
Marilyn Kliber, County Clerk

[rn h:\resolutions\09_22 Green Communities]

Michigan Green Communities Challenge

Attachment C

A community should consider the following suggested goals and activities for inclusion in Step 5 of the Challenge:

1. Develop and implement an energy improvement plan for governmental operations.

All local governments engage in planning—which can include land use, transportation, open/public spaces, historic preservation, etc. Increasingly, local governments are recognizing the value in developing plans regarding energy usage. An energy-efficient plan outlines the measures a jurisdiction has and will implement to become more energy efficient and reduce its energy consumption. To determine what types of energy-efficient measures will be implemented, the jurisdiction must first assess the current energy consumption of government-owned and leased facilities. It generally applies to retrofitting existing buildings and sets standards for new governmental facilities to incorporate energy-efficient and sustainable building techniques in their construction.

Implementing energy-efficient and conservation measures into daily operations are essential for reducing energy consumption. An energy improvement plan provides examples of energy-efficient measures that can be applied in areas such as lighting, temperature control, infrastructure, purchasing/procurement, renewable energy, and alternative fuels. Employee awareness should be a fundamental part of the plan. By educating employees about the need for resource conservation and what they can do to make a difference, municipal facilities will become more energy efficient.

Continue tracking energy usage through Energy Star's Portfolio Manager or ICLEI's CACP 2009 software greenhouse gas emissions through a period of three years.

Resources / Links:
Guidelines for Energy Management

2. Adopt a community sustainability plan, climate protection resolution, or similar commitment by the governing body.

By adopting a sustainability plan, or a similar document to organize green initiatives, local governments can coordinate efforts that often cross departmental boundaries, gain input and buy-in from governmental staff and additional stakeholders, and track progress to ensure that goals are met. While each jurisdiction should create a plan that suits its particular situation, the development and adoption of the plan is an important exercise that can benefit communities of any size and lead to demonstrable

results. Credit is also given for adoption of resolutions that are circulating nationally—or their equivalent—to promote responsible actions on climate protection through emissions reductions. While these resolutions are best coupled with plans for specific actions and policies, they represent a public commitment on behalf of the community and can be a positive first step.

RESOURCES / LINKS:
City of Grand Rapids
Grand Valley State University
Michigan Climate Challenge
Mayors Climate Protection Center
Intergovernmental Panel on Climate Change
Michigan Climate Action Council
The Michigan Climate Action Plan
ICLEI Five milestones for sustainability

3. Develop recycling and household hazardous waste programs for residents and businesses.

Everyone produces waste. Although most waste can be safely disposed in landfills, much of the solid waste stream contains materials that could be processed into usable commodities. Some common recyclables include metals and corrugated cardboard containers. By providing curbside and drop-off programs, a community is supporting jobs (for every one job created in the waste industry, five jobs are created in the recycling industry) and providing residents and businesses an opportunity to do something positive for their community. Recycling reduces energy use and greenhouse gas emissions in addition to extending landfill life and protecting natural resources from the damage of harvesting, mining, and depletion of non-renewable resources such as oil and metals.

RESOURCES / LINKS:
City of Ann Arbor
City of Grand Rapids
U.S. EPA
Tools for Local Government Recycling Programs
Michigan Dept. of Environmental Quality
WARM - calculator for measuring greenhouse gas (GHG) reductions
Northeast Recycling Council environmental benefits calculator

4. Consider performance contracts.

An energy audit gives a snapshot look at government facility energy use trends, consumption, and potential opportunities to help better manage facilities. Such an audit evaluates energy consumption practices and provides an analysis that can be the foundation for continued business planning, especially in identifying areas for

energy and cost savings within existing facilities.

The use of energy-saving performance contracting is becoming increasingly attractive to local governments. This is when a government or organization contracts with a private firm to assess and correct energy deficiencies—often with little or no actual cost to the locality as the long-term energy savings offset the costs.

Resources / Links:
Rebuild Michigan
EPA Webinar: Maximize Stimulus Funding with Performance Contracting and ENERGY STAR
Retired Engineers Technical Assistance Program (RETAP)
U.S. Environmental Protection Agency
Portfolio Manager Factsheet

5. Consider the purchase of electric power from renewable sources or install renewable energy technology (solar, wind, or geothermal) for use in government facilities.

The total of purchased renewable energy and on-site produced renewable energy must equal at least 1% of the energy used of all governmental facilities.

Resources / Links:
Clean, Renewable and Efficient Energy Act (2008 PA 295)

6. Develop a policy to utilize energy-efficient and dark sky-compliant outdoor light fixtures.

7. Establish a policy of adherence to LEED certification criteria for all new government facilities.

8. Approve or build a LEED-certified government building or renovate an existing building to LEED-certified level.

9. Implement an internal government program that reduces, reuses and recycles paper, plastic and other materials.

10. Establish a procurement policy of a minimum of 30 percent post-consumer recycled content for everyday office paper use (consistent with the current federal government policy).

11. Adopt a "green fleet" policy that incorporates, at a minimum, the purchase of low-emitting, fuel-efficient vehicles for vehicle fleet

replacement and the use of alternative fuels (biodiesel, natural gas, ethanol) in fleet operations.

12. Promote light rail systems, increased busing, and other modes of transportation.

13. Develop and implement a plan for tree preservation and planting.

14. Adopt an anti-idling policy for government fleet vehicles.

15. Develop diesel engine retrofits partnership (NOx filters and particulate traps) with the heavy construction industry to reduce air pollutants.

16. Provide employee benefits for ride sharing, walking, biking or taking public transit to work.

17. Adopt a policy that a minimum of 20 percent of the eligible workforce should participate in alternative work schedules or telework by 2010.

18. Develop an employee education program on policies/practices relating to the environment and energy conservation.

19. Establish an advisory commission (or "Green Team") composed of local residents and business representatives to advise and assist the local governing board on policies and practices dealing with the environment, energy efficiency and conservation.

RESOURCES/LINKS:
ICLEI--Outreach and Communications Guide- A tool to help local governments effectively communicate climate information to their constituencies

20. Develop and implement an energy efficiency and conservation education program for the local community dealing with the environment and energy.

21. Create a water protection education program.

Water is essential for communities and cannot be taken for granted. Education establishes a foundation for working together to secure and protect this vital natural

resource. Understanding water's flow through our daily lives informs the debate about the cost and value of public investments in municipal water supplies.

RESOURCES / LINKS:
American Water Works Association
U.S. EPA Water
Water Resources Advisory Council
Statewide Resource Network
SEMCOG

22. Offer incentives for residents and businesses to retrofit all lighting systems with energy-efficient bulbs.

23. Target major institutions and industries for an educational campaign about ways to reduce energy consumption.

24. Create a program to help residents replace older air conditioning and refrigeration units with more efficient models.

25. Implement real-time pricing of electricity to show residents the increased cost they experience during peak demand times.

26. Partner with nonprofit organizations and governmental agencies for the purpose of retrofitting existing facilities to improve energy efficiency.

27. Develop and implement programs to conserve energy used in transportation, including but not limited to:

- Employee flex time programs;
- Promoting use of satellite work centers;
- Development and promotion of zoning guidelines or requirements that promote energy efficient development;
- Development of infrastructure such as bike lanes and pathways and pedestrian walkways;
- Synchronization of traffic signals;
- State/local/regional integrated planning activities (i.e. transportation, housing, environmental, energy, land use) with the goal of reducing greenhouse gas emissions and vehicle miles traveled;
- Improvements in operation and system efficiency of the transportation system such as implementation of intelligent transportation system (ITS) strategies;

- Idle-reduction technologies and/or facilities to conserve energy, reduce harmful air pollutants, and greenhouse gas emissions from freight movement; and
- Installation of solar panels on interstate rights-of-way to conserve energy in highway operations and maintenance activities.

28. Implement distributed energy resource technologies that significantly increase energy efficiency, including:

- District heating and cooling systems
- Combined heat and power systems
- Cogeneration systems
- Energy storage systems
- Absorption chill
- Desiccant humidifiers
- Micro turbines
- Group source heat pumps

29. Consider the implementation of technologies to reduce, capture, and, to the maximum extent practicable, use methane and other greenhouse gases generated by landfills or similar waste-related sources, such as wastewater treatment plants, operations producing food waste, dairy farms and other animal operations.

RESOURCES / LINKS:
The Michigan Climate Action Plan

30. Replace traffic signals and street lighting with energy efficient lighting technologies, including light emitting diodes; and any other technology or equal or greater energy efficiency.

31. Update government buildings by developing, implementing and install onsite renewable energy technology that generates electricity from renewable resources, including solar energy, wind energy, fuel cells, and biomass.

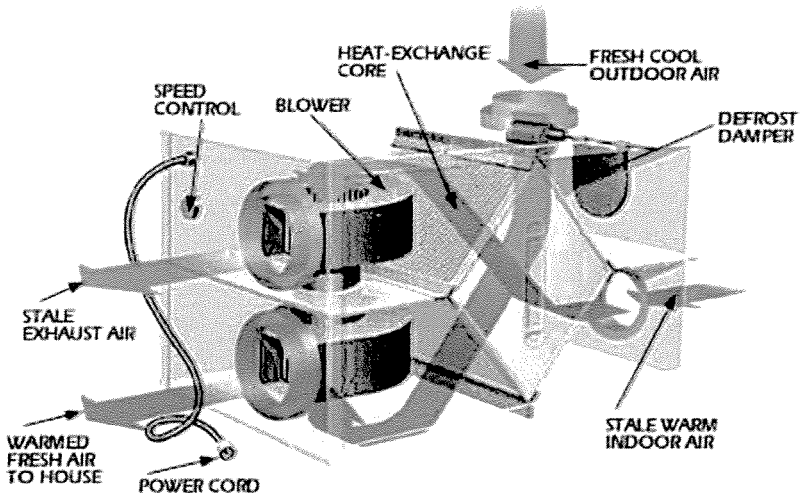
32. Consider any other appropriate activities which have been outlined within a community's Energy Efficiency and Conservation Strategy as developed under the EECBG program.

APPENDIX C

How It Works: Heat Recovery Ventilator

A simple device that keeps heat in while moving stale air out.

BY THOMAS KLENCK
Illustrations by George Retseck
Published in the August 2000 issue.

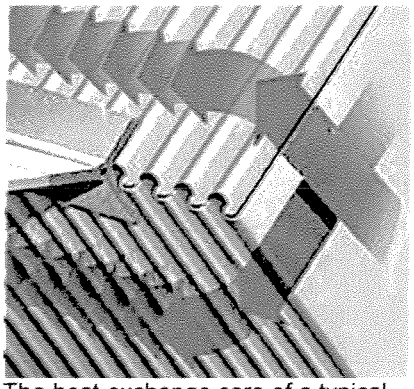


A residential heat-recovery ventilator uses separate blowers to move incoming fresh and outgoing stale air. The heat-exchange core transfers heat to fresh air without mixing the airstreams. The damper automatically stops cold air for defrosting.

While necessity may be the mother of invention, it's increasing costs that spawn efficiency. Before the '70s, we happily cranked up the thermostat when the house felt chilly. Once heating costs went through the roof, though, we all put on sweaters and started looking for ways to save. And, with up to 40 percent of our heating dollar going to air infiltration--otherwise known as drafts--sealing the place up began to seem like the best defense against high heating bills.

Over a period of time, older homes began to sport new, tight windows and doors, insulation and vapor-barrier improvements, modern siding, and caulk for every crack through which air might pass. New homes left the drawing board designed to be tight, and builders became familiar with the new materials and skills needed to meet market demand and updated regulations. Homes were finally becoming thermally efficient. What some began to wonder, though, was whether they were habitable.

It turns out that those heat-robbing drafts had a role in the ecosystem of the home--they provided fresh air to breathe. Without realizing it, builders before the energy crisis had been installing an effective, albeit haphazard, ventilation system. If you could afford the heating bills, it worked.



The heat-exchange core of a typical HRV is made up of thin aluminum passages. Incoming and outgoing airstreams flow in alternate passages. Heat is transferred from warm stale air to cool air.

Why Ventilate?

Life inside today's tight home generates both moisture and pollutants. The moisture comes from cooking, washing, showers and breathing. At excessive levels, moisture condenses on windows and can cause structural deterioration. Areas of excessive moisture are also breeding grounds for mold, mildew, fungi, dust mites and bacteria. You know you have a

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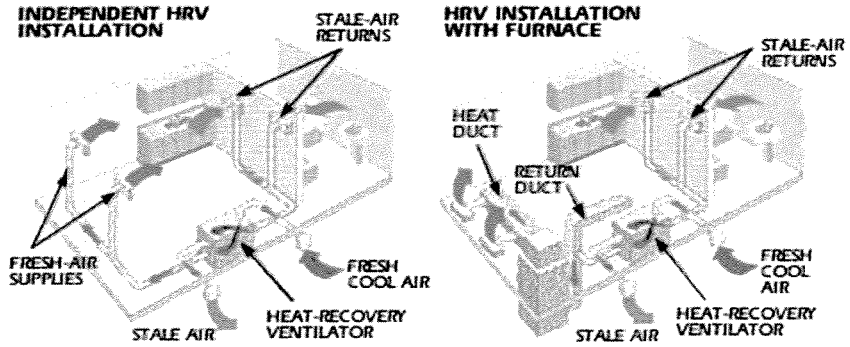
problem if you find moisture collecting on your windows, or if you notice black spots on walls. These unsightly spots indicate mildew growth. Mold spores and dust easily become airborne and circulate freely throughout the house, possibly causing a range of symptoms and allergic reactions.

In addition to excessive moisture and biological contaminants, appliances that utilize combustion have the potential for allowing gases, including carbon monoxide, and other pollutants to escape into the air. Some common sources may include gas ranges and water heaters, unvented space heaters, leaky chimneys and wood-burning appliances. Even breathing can add to the problem when carbon dioxide reaches excessive levels, creating stale air.

And that's not all that gets into the air. If your home is new, the very products it's made of can give off gases that are less than agreeable to your comfort and good health, and in many areas of the country there's a concern about radon seeping from the ground.



A heat-recovery ventilator is generally installed in the basement and connected to air-supply and air-return vents through ductwork (left). Exterior supply and return hoods must be separated. In a forced-air heating system, the HRV unit can be connected into the existing ductwork. Here, the fresh airstream enters the heating system through the furnace-return duct (right).

Open A Window?

The American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) sets the standard for residential ventilation at a minimum of .35 air changes per hour, and not less than 15 cubic feet per minute (cfm) per person. An old home may very well exceed these values--especially on a windy day. However, on a calm winter day, even a drafty house may fall below the recommended minimum ventilation standard.

There are partial solutions to the indoor air-quality problem. For example, an electrostatic filter installed in a forced-air heating system will reduce airborne contaminants, but it won't help with moisture, stale air or gaseous pollutants. And, local exhaust fans can remove excess moisture in the kitchen, bath and laundry area, but create negative pressure inside the house. As they pump air out, the resultant vacuum slowly draws air into and through the house structure, bringing with it odors, dust and contaminants. In areas where radon is a problem, the negative pressure may increase radon levels.

A better whole-house solution is to create balanced ventilation. This way, one fan blows the stale, polluted air out of the house while another replaces it with fresh. Of course, if the fresh air is cold, you need to warm it up, and that costs money.

Holding The Heat

A heat-recovery ventilator (HRV) is similar to a balanced ventilation system, except it uses the heat in the outgoing stale air to warm up the fresh air. A typical unit features two fans--one to take out household air and the other to bring in fresh air. What makes an HRV unique is the heat-exchange core. The core transfers heat from the outgoing stream to the incoming stream in the same way that the radiator in your car transfers heat from the engine's coolant to the outside air. It's composed of a series of narrow alternating passages through which incoming and outgoing airstreams flow. As the streams move through, heat is transferred from the warm side of each passage to the cold, while the airstreams never mix.

Depending on the model, HRVs can recover up to 85 percent of the heat in the outgoing airstream, making these ventilators a lot easier on your budget than opening a few windows. And, an HRV contains filters that keep particulates such as pollen or dust from entering the house. You will, though, find your energy bill going up slightly to pay for replacing the heat that isn't recovered. An average HRV installation can run from $2000 to $2500, but costs will vary widely depending on the specific situation.

Although an HRV can be effective in the summer months, when it will take heat from incoming fresh air and transfer it to stale air-conditioned exhaust air, it's most popular in colder climates during the winter. If the temperature falls below about 20° F, however, frost can build up inside the exchange core. To handle this, a damper closes off the cold airstream and routes warm air through the core. After several minutes, a timer opens the fresh-air port and ventilation continues.

A typical HRV for residential use might move as much as 200 cfm of air, but the fan speed can be set to suit the air quality in the home. For example, a slow to medium fan speed may be adequate for normal living, while a house full of guests might require the highest setting. Controls are available for intermittent and remote operation.

HRVs are ideal for tight, moisture-prone homes because they replace the humid air with dry, fresh air. In climates with excessive outdoor humidity, an energy-recovery ventilator is more suitable. This device is similar to an HRV, but dehumidifies the incoming fresh airstream.